

## CLAIMS

1. A computer program product, tangibly embodied in an information carrier, comprising instructions operable on a client computer to:

provide on a client computer a user interface for a computer program application, the user interface being operable to receive input from a user interacting with the client and from the input to generate user interaction events;

identify on the client one or more possible user interaction events while the user interface is in a current user interface state, the possible user interaction events being user interaction events that would arise from input the user interface could possibly receive in the current user interface state from the user;

pre-process one or more of the possible user interaction events to generate one or more possible user interface states; and

store the one or more possible user interface states for later use.

2. The product of claim 1, further comprising instructions to:

receive an actual input from the user and, if one of the possible user interface states corresponds to a user interaction event that arises from the actual input from the user, make the corresponding one of the possible user interface states the current user interface state.

3. The product of claim 1, further comprising instructions to:

pre-render one or more of the possible user interface states to generate one or more possible user interface appearances; and

store the one or more possible user interface appearances for later use.

4. The product of claim 3, wherein the instructions to pre-render one or more of the possible user interface states comprise instructions to generate code to render the corresponding user interface states.

5. The product of claim 4 wherein the code to render the corresponding user interface states comprises HTML (Hypertext Markup Language) code.

6. The product of claim 3, further comprising instructions to:

receive an actual input from the user and, if one of the possible user interface states corresponds to a user interaction event that arises from the actual input from the user, making the corresponding one of the possible user interface appearances a user interface appearance of the current user interface state.

7. The product of claim 1, further comprising instructions to:

specify an order for pre-processing possible user interaction events.

10 8. The product of claim 7, wherein the instructions to specify an order for any pre-processing of possible user interaction events comprise instructions to:

estimate the likelihood of the one or more possible user interaction events based on an estimate of the likelihood of different inputs the user interface could possibly receive in the current user interface state from the user.

15 9. The product of claim 8, wherein:

the user interface comprises a control having instructions to establish estimates of the likelihoods of generating possible user interaction events from user interaction with the control; and

20 the instructions to estimate the likelihood of the one or more possible user interaction events comprise instructions using the estimates established by the control.

10. The product of claim 1, further comprising instructions to:

detect a period of inactivity; and

begin executing the instructions to identify and pre-process only after a period of inactivity.

11. The product of claim 1, wherein:

the instructions to pre-process one or more of the possible user interaction events to generate one or more possible user interface states comprise instructions to obtain data from the application for possible user interface states.

5 12. The product of claim 1, wherein the instructions to identify on the client one or more possible user interaction events comprise instructions to include as possible user interaction events only those possible user interaction events having an estimated likelihood of occurrence exceeding a threshold.

13. The product of claim 1, wherein:

10 the computer program application is a program running on a server computer in data communication with the client computer; and

the instructions to provide a user interface on the client computer comprise instructions to provide the user interface in a Web browser.

14. A computer implemented method, comprising:

15 providing on the client computer a user interface for a computer program application, the user interface being operable to receive input from a user interacting with the client and from the input to generate user interaction events;

20 identifying on the client one or more possible user interaction events while the user interface is in a current user interface state, the possible user interaction events being user interaction events that would arise from input the user interface could possibly receive in the current user interface state from the user;

pre-processing one or more of the possible user interaction events to generate one or more possible user interface states; and

storing the one or more possible user interface states for later use.

15. The method of claim 14, further comprising:

receiving an actual input from the user and, if one of the possible user interface states corresponds to a user interaction event that arises from the actual input from the user, make the corresponding one of the possible user interface states the current user interface state.

5 16. The method of claim 14, further comprising:

pre-rendering one or more of the possible user interface states to generate one or more possible user interface appearances; and

storing the one or more possible user interface appearances for later use.

17. The method of claim 14, further comprising:

10 specifying an order for pre-processing the possible user interaction events.

18. An apparatus, comprising:

a client computer implementing a user interface for a computer program application, the user interface being operable to receive input from a user interacting with the client and from the input to generate user interaction events;

15 means for identifying one or more possible user interaction events while the user interface is in a current user interface state, the possible user interaction events being user interaction events that would arise from input the user interface could possibly receive in the current user interface state from the user;

20 means for pre-processing one or more of the possible user interaction events to generate one or more possible user interface states; and

means for storing the one or more possible user interface states for later use.

19. The apparatus of claim 18, further comprising:

means for receiving an actual input from the user and, if one of the possible user interface states corresponds to a user interaction event that arises from the actual input from the user, make the corresponding one of the possible user interface states the current user interface state.

Patent

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20. The apparatus of claim 18, further comprising:

means for pre-rendering one or more of the possible user interface states to generate one or more possible user interface appearances; and

means for storing the one or more possible user interface appearances for later use.

5 21. The apparatus of claim 18, further comprising:

means for specifying an order for pre-processing the possible user interaction events.